LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **STATISTICS**

SECOND SEMESTER – **NOVEMBER 2016**

ST 2503 – CONTINUOUS DISTRIBUTIONS

Date: 12-11-2016   Dept. No.   Max. : 100 Marks

Time: 01:00-04:00

SECTION - A

ANSWER ALL THE QUESTIONS: **(10X2=20 Marks)**

1. Define conditional variance.

2. What kind of distribution is Normal? What is the maximum probability?

3. Define exponential distribution.

4. Write down the mean and variance of F distribution.

5. Define order statistics.

6. When are two random variables stochastically independent?

7. Define Normal distribution and write its moment generating function.

8. State Additive property of Gamma distribution.

9. Write any two properties of 't' distribution.

10. Define stochastic convergence.

SECTION – B

ANSWER ANY FIVE QUESTIONS   **(5X8=40 Marks)**

11. Derive the moments of Uniform distribution.

12. Write down the properties of Normal distribution.

13. Derive the constants (mean and variance) of Beta distribution (first kind).

14. Write down the uses and assumptions of 't' distribution.

15. Derive the limiting form of Gamma distribution.

16. The probability function of two random variable X and Y is given by

$$F(x,y) \begin{cases} 2 & 0<x<1, \quad 0<y<x \\ 0 & \text{Otherwise} \end{cases}$$

    i)   Find the marginal density function of X and Y
    ii)   Find the conditional density function of X given Y=y
    iii)   Check whether they are independent or not

17. Write the cumulative distribution function of single order statistic.

18. Define chi-square and derive its p.d.f.

SECTION –C

ANSWER   ANY TWO   QUESTIONS   **(2X20=40 Marks)**

19. Define two dimensional random variable, properties of joint distribution, marginal and

conditional distribution functions.

20. a) Write down the linear combination of independent normal variates is also a normal variate.

b. Explain Bivariate Normal Distribution.

21 .Define F distribution and derive its p.d.f.

22. State and Prove Lindeberg Levy theorem.

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